"The IASC project Tundra-Taiga Interface towards the future"

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Abstract:

The IASC project *Tundra-Taiga Interface* (TTI) was initiated in 1999 with the main aims to *i)* review and collate relevant existing research effort, expertise and programs; *ii)* bring researchers together in international workshops and conferences; *iii)* assess the state of knowledge at these meetings; *iv)* establish communication and networking between interest groups; *v)* identify and prioritize relevant research and research consortia; *vi)* implement top priority projects; and *vii)* publish reviews of the current knowledge. The results of the initial workshop, held in Abisko, were published in an Ambio volume in 2002: *"Dynamics of the Tundra-Taiga Interface"* (Report 12). In 2004 the direction of the project shifted from collating and synthesizing new knowledge to identifying and initiating priority research activities, with the science plan and implementation plan as central tools. At the start-up of activities directed towards the International Polar Year (IPY) the circumpolar and interdisciplinary approach of TTI and its focus on the southern delimitation zone of the Arctic formed the platform for a proposed IPY core project: *PPS Arctic* (#151, endorsed by IPY JC in November 2005).

The position and dynamics of the arctic-boreal boundary are major determinants for land atmosphere interactions at the circumpolar scale and for ecological and socioeconomic conditions at the local to regional scale. This zone, the 'tundra-taiga ecotone' varies dramatically in width (up to hundreds of kilometres) throughout the circum-arctic North and has thus a recognized exceptional importance, in terms of global vegetation, climate, biodiversity and human settlement. The area covered by the tundra-taiga ecotone is compared with the area covered by Arctic sea ice and the circum-arctic zone of isolated to continuous permafrost, to which the ecotone has strong links. Position and response pattern to climate change varies strongly between oceanic and continental regions around the circum-arctic. The particular vulnerability of the zone to changes in climate and land use is recognized, along with concern for subsequent alterations and shifts of its position with consequences for the entire arctic region and the global climate through feedback mechanisms. Despite this recognition, comprehensive and large scale multidisciplinary scientific focus incorporating cause, effect, and importance of its past and present transformation to the biota and human societies, has been lacking. This multidisciplinary research field is in focus in the *PPS Arctic* core project and scientifically dealt with through four project modules: Global change effects on the arctic-boreal transition zone and modelling structural changes; Past history and broad-scale temporal variations of the transition zone; Classifying vegetation, land cover and land use, and their spatial variations, by remote sensing and landscape analysis; Land use and development of the Arctic-Boreal transition zone through the joint perspective of local traditional and scientific knowledge. The project currently includes 13 individual projects (more might be added en route towards the start of IPY). Unifying foci for projects and modules are: *Space* – the transitional zone between the boreal forest and the open treeless tundra; *Time* – the Holocene, the present and the next 100 years; *Scope* – interdisciplinary research, monitoring change, and sustainable resource use. The *PPS Arctic* group had its first main project meeting in Quebec City in February 2006, where the agenda was set for the planning period up to the project kick-off in 2007. Major items dealt with included: role of individual projects; member responsibilities, proposal structures, funding opportunities, links to other IPY core projects, common protocols, network development, and site identification. More than 35 sites (Canada 21; Barents region 9; Alaska 2(4); Russia 4(+?)) are selected for the common IPY time window. These sites not only represent the circumpolar, joint natural and social science, and oceanic vs. continental project approach, but also form an important platform for the future. *PPS Arctic* is coordinated by a steering board representing the scientific and geographical width of the project. The common protocol will be formed en route towards the second annual *PPS Arctic* core project meeting (Tromsø March 2007), where the protocol will be approved together with plans for fieldwork and exchange of PIs, postdocs and students.

The main TTI activity during IPY will be *PPS Arctic,* but also the build up of a broader scientific and community based long-term network for the future. For this activity and for past TTI activities the support from IASC – Young Scientist Support and Travel Support – will be and has been of great importance along with the recognition as an IASC project.